TOOL DIE MACHINE
PROGRESS
THE NATIONAL TOOL AND DIE JOURNAL

TOOLS, DIES, JIGS, FIXTURES, MOULDS, GAGES, MACHINES
Design and Engineering
PRECISION SPECIALTIES STAMPING and PARTS PRODUCTION
Official Publication
Special Tool, Die & Machine Shop Industry

NOVEMBER,
1937

Circulation more than 10,000

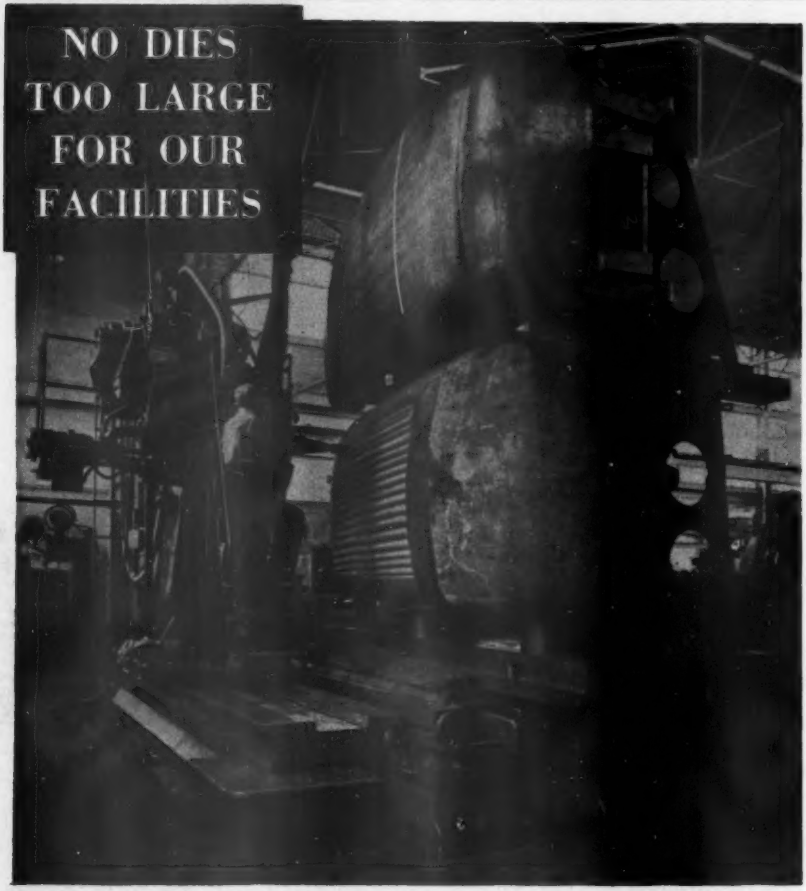
CUT YOUR
End-Mill Sharpening
COSTS WITH
THE WELDON
END-MILL
SHARPENIN
FIXTURE

A simple, effective device which accurately reconditions straight and taper shank end mills from 1-16" up to 2" diameter, fast or slow spiral, right or left hand. No cams or centers required. Rocking arm permits moving mill away from wheel without changing machine setting.

Write for circular.

THE
WELDON
TOOL CO.
3000 WOODHILL RD. CLEVELAND, OHIO
"Pioneers in Fast Spiral Double-end End-Mills"

NO DIES TOO LARGE FOR OUR FACILITIES



● We have been building such satisfactory performance into Koestlin Dies that our extensive facilities have been operating at capacity almost uninterruptedly for many months.

Our service is complete — design, engineering and construction — pattern shop. We would like to estimate your requirements — all sizes of dies.

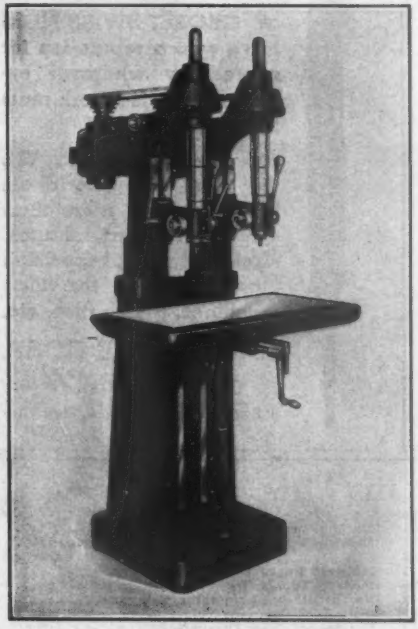
We manufacture the well-known **GRINDRITE**
(Patented)

These heavy duty grinders are indispensable in tool and die shops, pattern shops and foundries; machine shops and metal stamping plants; automobile, truck and trailer body plants; car and locomotive shops; railroad repair shops; ship yards — in fact, whenever and wherever faster grinding of heavy, difficult-to-handle or odd-shaped products is required.

KOESTLIN TOOL & DIE CORP.

3601 HUMBOLDT AVE. *Largest Independent Die Builder* DETROIT, MICH.

Are Your Costs too High on Small Drilling Work?



— They need not be if you will look into the advantages offered in the "Buffalo" No. 14 High Speed Sensitive Drill.

In this modern production drill you will find:

1. Design for greater convenience of operator.
2. Rugged construction.
3. V-Belt Drive.
4. 5 Speeds.
5. Alloy steel spindle running in ball bearings.
6. Sensitive hand feed.

The result — quality work in less time. Isn't that what you want? Write for Bulletin 2726-B.

BUFFALO FORGE COMPANY

477 Broadway Buffalo, N. Y.

Branch Engineering Offices in Principal Cities

In Canada: Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

"Buffalo" No. 14 *High Speed* SENSITIVE DRILL

When you order or write about products described in TDM PROGRESS please mention the publication.

TOOL DIE MACHINE
PROGRESS
THE NATIONAL TOOL AND DIE JOURNAL

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Published in the interest of Manufacturers and Users of
CUSTOM-BUILT TOOLS, DIES, MACHINES AND ACCESSORIES

GEORGE J. HUEBNER . . . *Publisher and Editor*
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A National Trade Association

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3 Park Place New York City

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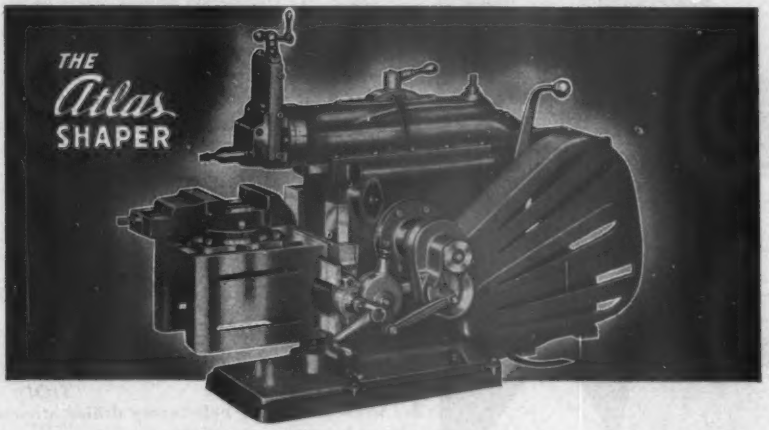
STAMPINGS TOOLS • DIES
Our Business . . . to serve you
THE BOEHM PRESSED STEEL CO.
2225 West 65rd Street Cleveland, Ohio



No one thing this company has ever developed has received such a tremendous ovation as this new precision 7" Bench Shaper. Letters asking for more information read like a roster of American big business.

All the features of larger machines are embodied in this new Atlas — precision, power, rugged strength, and more versatility — at a price that sets a new standard of value in metal shapers. The drive is standard bull gear type powered by V-belts from motor to spindle. Four-step countershaft and pinion-shaft pulleys produce four speeds between 45 and 200 strokes a minute — five surface feeds in either direction.

We want every executive concerned with problems of tool room and shop to know about this new Shaper. If you haven't written yet, do it now.

ATLAS PRESS CO., 1012 N. Pitcher Street
Kalamazoo, Michigan

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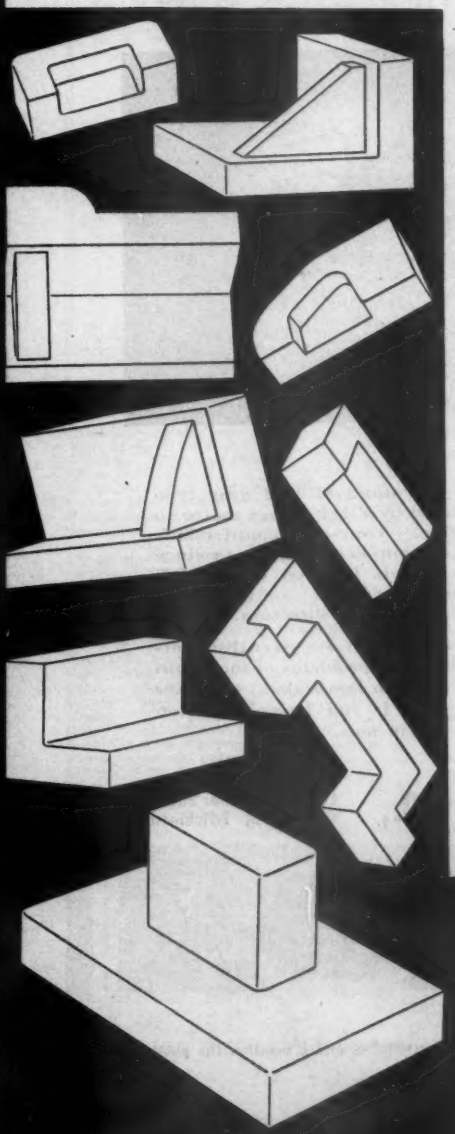
New! FCC COMBINED

ELECTRICALLY WELDED and ROLLED



FCC composite steel die sections and Jessop rolled composite die steel are the big money savers of the industry. In order to serve the trade more economically and efficiently the Composite Departments of The Forging and Casting Corporation and Jessop Steel Company now offer their composite steel die sections in combination. Jessop rolled composite shapes of several standard heights are used in the straight and slightly bent sections of the die. FCC electrically welded sections are used on the irregular shapes and on sections of any specified height. This combination of die construction effects substantial reductions in die costs and offers you new opportunities for profit.

Advantages of **FCC** *and* **JESSOP** *Composite Die Sections*

1. Tool steel cutting edge backed by non-hardenable soft steel.
2. Screw and dowel holes easily drilled after machining and hardening operations.
3. Expensive lapping operations eliminated.
4. Secure fit of sections on die shoes.
5. Slight warpage easily straightened.
6. Greater hardness can be used on cutting edges because the tough, soft steel backing acts as a cushion.
7. By using a combination of electrically welded and rolled bar composite, savings of 18% to 38% are secured depending on the sections.

FCC

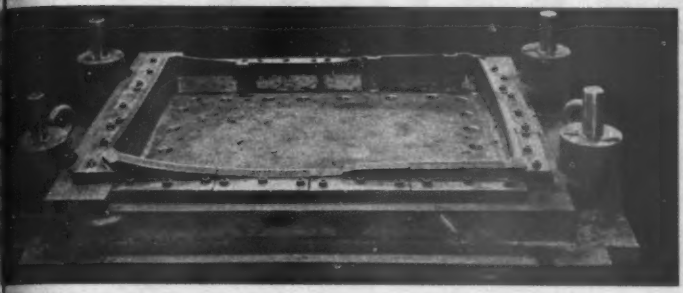
THE FORGING AND CASTING CORPORATION

FERNDALE (DETROIT) MICHIGAN

COMPOSITE STEEL DIES • TOOL STEEL CAST TO SHAPE
TOOL AND ALLOY STEEL CASTINGS • LIGHT CAST-IRON

OMPOSITE DIE CONSTRUCTION

OMPOSITE STEEL DIE SECTIONS



CC ELECTRICALLY ELDED DIE SECTIONS

wide range of shapes, sizes and steels be used in FCC electrically welded die ions. Cutting edges of water, oil or air ening carbon vanadium or high speed el are welded on to a soft, relatively in- ensive base, which is non-hardenable and readily drilled and reamed. Sections of ular and irregular shapes and heights are e to exact specifications.

JESSOP ROLLED DIE SECTIONS

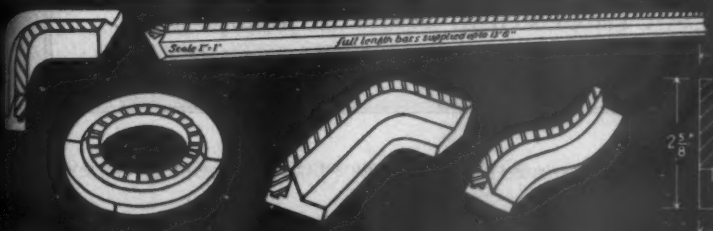
These rolled bar steel shapes are recommended for straight die sections and also for slightly bent sections. The cutting edge is electric-furnace-melted, water-hardening tool steel backed by a tough, non-hardenable steel. Seven different die sections of composite bars are available, in lengths of 8 to 10 feet. The savings range from 28% to 47%.

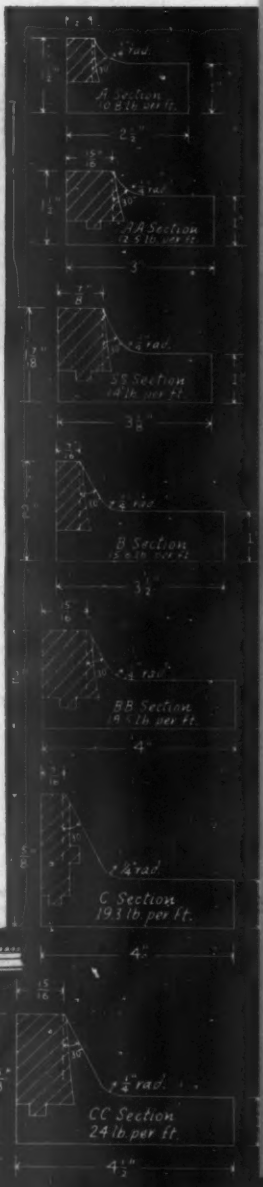
Lower Ultimate Cost!

APPLICATIONS

Auto body die work, stove dies, refrigerator panel dies, aeroplane metal sheet shape dies, toy dies, railroad car dies, metal container dies, truck body die work, and any applica- in which sheet metals are to be cut to regular or irregular shapes.

Send for complete information on FCC and Jessop Composite Die Sections and name of est distributor. Write to The Forging and Casting Corporation, Ferndale, Michigan, or op Steel Company, Washington, Penna.





Rings • Discs • Blocks

Bars • Special Shapes

FORGINGS

Composite Die Forgings

•

We specialize in

TOOL STEEL AND ALLOY FORGINGS

from all makes and grades.

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Particular attention is given to heat treatment to insure machinability and uniformity.

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ANDERSON, SHUMAKER COMPANY

822-824 SOUTH CENTRAL AVE. CHICAGO, ILL.

Phone AUStin 0381

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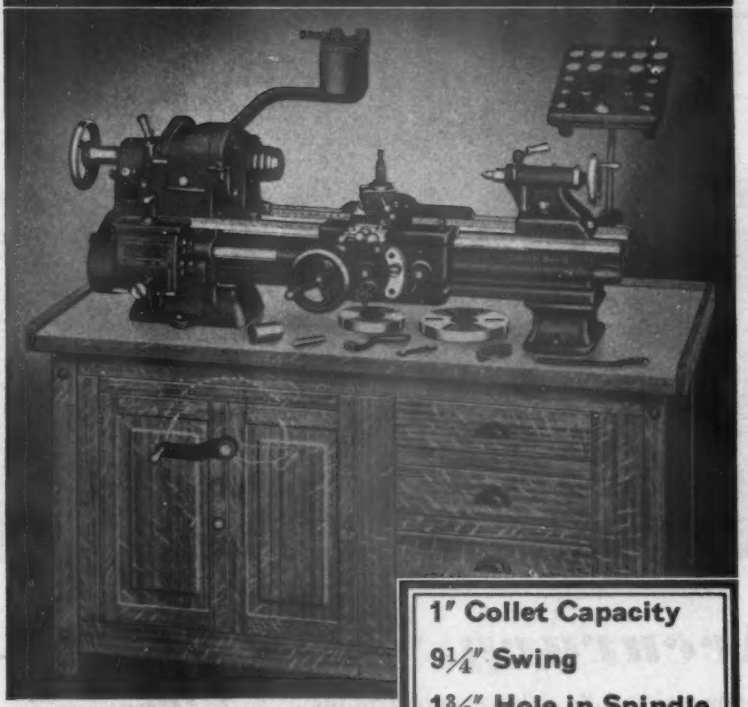
New South Bend 1" Collet Lathe



9¼" Swing by 3' Bed Quick Change Gear, Underneath Belt Motor Drive Bench Lathe complete as shown above, with Draw-in Collet Chuck, 8 Collets, Collet Tray, ½ H.P. Motor, and Electrical Equipment. Wt. 680 lbs. f.o.b. factory..... $656.50

1" Collet Capacity
9¼" Swing
1⅜" Hole in Spindle
Priced $387 and up

THIS new 9-inch lathe is a back-geared Screw-Cutting lathe with all engine lathe features, and is recommended for the manufacturing plant and the tool room. Draw-in Collet attachment available in Hand Wheel Type and Quick Acting Lever type. Six tool bed turret and Double Tool slide adapt lathe to multiple operation manufacturing jobs. Telescopic Screw Type Taper Attachment and other attachments also available.

SOUTH BEND LATHE WORKS
802 East Madison Street, South Bend, Ind., U. S. A.

Write FOR NEW CATALOG

Catalog No. 97 illustrates, describes, and prices the new 9-inch South Bend Large Spindle Hole Lathe in Underneath Belt Motor Drive, Pedestal Adjustable Motor Drive, and Countershaft Drive Types, and in 3', 3½', 4', and 4½' bed lengths. Copy sent free, postpaid.

SOUTH BEND *Precision* LATHES

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Accuracy . . .

Among tool and die making equipment the *jig boring machine* is a symbol of the finest precision work.

In our shop it is only one of the expensive machine tools which we consider necessary for building the utmost accuracy into Dies . . . Jigs . . . Fixtures . . . Gages . . . Special Tools and Machines.

Our facilities for large work include also:

Lucas Precision Horizontal Boring Drilling and Milling Machines.

Gray Maxi-Service Open-Side Planers.

A DEPENDABLE TDM CONTRACT SHOP

Have You Investigated

the Bunell Method for reclaiming the worn edges of *Tools, Dies* and *Punches?* It is accomplished without annealing and the new edges are remarkably efficient. The cost is small—the savings are big.

Let us show you

THE BUNELL MACHINE & TOOL CO.

1600 East 24th Street ● Phone PRospect 2681 ● Cleveland, Ohio

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LONGER LIFE

in EMPCO
Heat Treated
Steel Crankshafts..

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Switch to Empco
on your next order

FOR ALL TYPES OF PRESSES

ENTERPRISE MACHINE PARTS CORPORATION
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MANUFACTURERS SPECIAL MACHINERY - PARTS - MACHINE REBUILDING

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HOVIS HARDENED RETAINERS

Incorporating the screwlock principle of locking the punch . . . COVERED BY PATENT NO. 2017247

A new series of square hardened steel retainers is presented as an addition to our regular line of punches and retainers. These are made especially

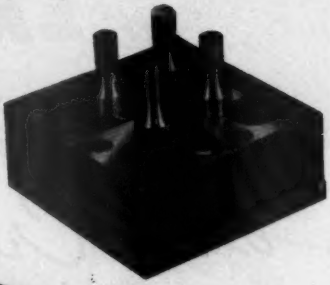
FOR HIGH PRODUCTION AND PROGRESSIVE DIES

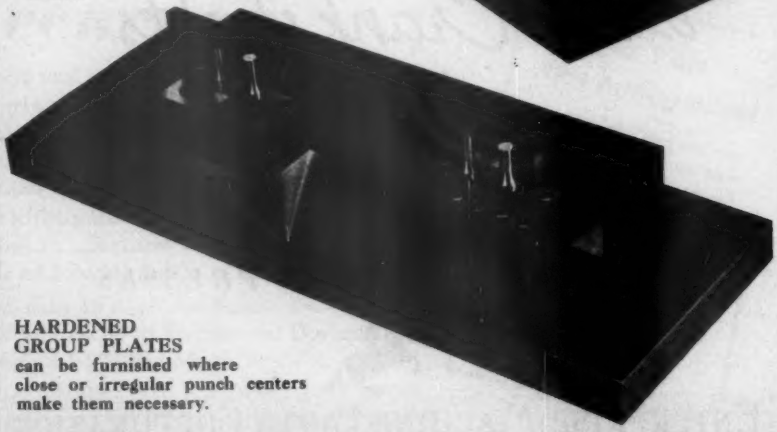
Punches used in this series are the same as used in the R-R series retainers.

These new S-R Retainers are made from case hardened steel. The punch hole is ground and lapped. The lock-screw counterbore is ground in the diameter to a close fit to the screwhead diameter, which is also ground. The center distance between the punch hole and the screw head counterbore is held to close limits to properly locate irregularly shaped punches by the screw head.

CLOSE GROUPING of these S-R standard retainers is possible because they are made with the punch close to one corner, which has all the advantages of both the square and end type retainers.

COMPOUND DIES with punches mounted close to the die sections make the use of this design advantageous because they require less room than long narrow end type retainers.





HARDENED GROUP PLATES can be furnished where close or irregular punch centers make them necessary.

HOVIS SCREWLOCK COMPANY

3125 E. LARNED STREET DETROIT, MICHIGAN

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Reasons WHY DOALL Is Recommended for Die Making

1. No "dead cycle" as in "jig saw" or hand sawing. Hence, 100% cutting efficiency instead of intermittent 25% cutting.
2. Entire length of the saw is used, while with a hack saw or reciprocating machine you use only the middle area of the saws.
3. No "drag back" to dull the cutting edge of the saws. It is well known that the drag on the back stroke dulls the files and saws quickest.
4. Steady flow of cutting provides for ease in following a line, simplicity in operation and greater efficiency.
5. The Doall combines, in one machine, various widths of saws, files and polishing bands.
6. The metal cutting band saws will cut the toughest high chrome, high carbon steels.
7. Work thickness capacity is 8". A 24"x34" work table is available with 30" throat depth.
8. These same band saws will cut other materials, such as aluminum, brass, bakelite, rubber, cork, hard wood, etc.

"We have used our DOALL night and day and like it fine."
Forward Tool & Mfg. Co., Chicago, Ill.

"We are having great success with our saw (DOALL) and are effecting savings in time that amount to about four to one faster than our old methods."
Mr. Ray W. Rice, Manager, The Quality Tool & Die Company, Indianapolis, Ind.

"It has been our experience in making irregular shaped dies that the sawing and filing method has practically eliminated the slotter or internal shaping method."
Mr. B. G. Tang, General Electric Co.

"We just finished up a set of dies in three days that ordinarily we would feel that we were fortunate if they were through the die shop in three weeks."
Mr. C. E. Erickson, President, C. E. Erickson Company, Des Moines, Iowa.

"We have two machines in constant use and find on some of our complicated Grille dies we can saw them out in about one fifth of the time, with less filing and a straighter die wall."
Mr. Leroy E. Dahlberg, Crowe Nameplate and Manufacturing Co.

CONTINENTAL MACHINE SPECIALTIES, INC.
1301 Washington Avenue S.
Minneapolis, Minnesota

●

Our factory representative near you will demonstrate Doall in your plant and on your work—no obligation.

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THE
INTERNATIONAL
TOOL COMPANY
J. J. KOHL
Pres.
DAYTON, OHIO

ITCO
PRODUCTS
Reg. U.S. Pat. Off.

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A THOUGHT

A SMOOTH RUNNING ORGANIZATION IS THE ESSENCE OF GOOD BUSINESS

Executives —

— each inherently able, and economically interested in DOING WELL their particular phase of the collective work—

Employees —

— experienced in their respective assignments, loyal and ambitious with a sure feeling that merit will be recognized and fairly considered free from politics or favoritism —

Management —

— at once exacting in its disciplinary and performance requirements — yet constantly and genuinely alive to those human and personal aspects of collective endeavor —

— THESE — are the motivating forces that make for successful enterprise.

ITCO PRODUCTS
Reg. U.S. Pat. Off.

Our Specialty—
JIG,
FIXTURE,
DIE,
GAGE
MACHINE DESIGNING
—o—
COMPLETE
TOOL ROOM
and
MACHINE SHOP
EQUIPMENT
—o—
Subsidiaries
INTERSTATE
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DIES and TOOLS

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WOOD and METAL
PATTERNS

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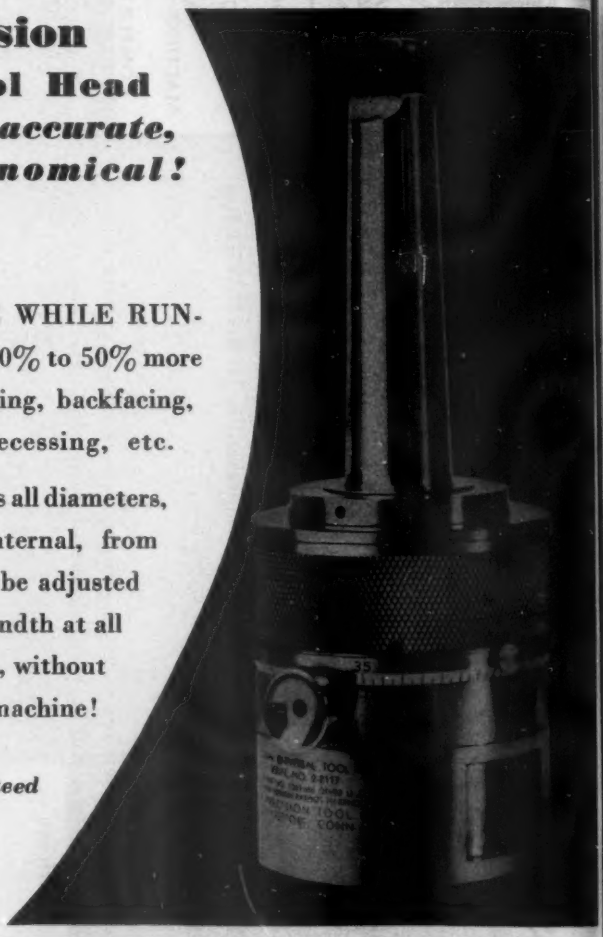
Adjustable While Running!

The Precision Universal Tool Head *is faster, more accurate, and more economical!*

Being "ADJUSTABLE WHILE RUNNING," it saves from 20% to 50% more time while boring, facing, backfacing, turning, trepanning, recessing, etc.

One compact size handles all diameters, both external and internal, from 1/16" to 16", and can be adjusted to a fraction of a thousandth at all times, and at all speeds, without stopping either tool or machine!



Unconditionally guaranteed for one year!

THE PRECISION TOOL COMPANY
BRIDGEPORT, CONN.

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Tool · Die · Machine **PROGRESS**

The National Tool and Die Journal

November, 1937 **Vol. 3, No. 8**

Products of Yesterday and Today

in which we quote from and discuss . . .

"Life, Liberty, and the Pursuit of Happiness!"

"Brave words! It took courage to write them in 1776. Courage, yes, and vision. For in the days when the 'rebels' were waging their fight for independence, there were many men and women in this country who did not enjoy liberty at all. Some of them were actually slaves; others were slaves to the heart-breaking toil of taming a wilderness. The workday was from dawn till dark—and beyond. The prevailing wage a pittance. Living conditions were difficult for all except a few.

"These men had vision—and they had confidence in the future of those struggling colonies, but even they did not foresee the fulness of life that has come to their descendants. For we can be free—free of superstition, of fear, and above all, free of the drudgery that makes life bleak and hard.

"For our slaves are machines, and we have thousands of them. As they extend a man's hands and increase the power he exerts, they have truly enriched human life. We live in better homes, we eat better and more diversified foods, more of us send our children to school, and they go to better schools. By increasing the amount that each worker can produce, the machine has made possible a tremendous increase in the rewards of work."

THE machine tools of Industry and the special tools, dies, jigs, fixtures, moulds and gages which are made to function with them are co-workers in a great cause. The ingenuity which enters into their design and construction is one of the great contributing factors which hand in hand with others have brought to the American citizen the world's finest manufactured products. We do not deny that there are still to be worked out serious problems which range from undernourishment of great numbers of our people, to better and more economical methods of governmental administration, but where in the world can we find as many families and individuals enjoying so many of the products of commerce which contribute to "Life, Liberty, and the Pursuit of Happiness"?

One of the most vital and interesting studies of American life from the industrial viewpoint which has come across the editor's desk in a long time is this booklet of the National Machine Tool Builders' Association. Because of the close working relationship which exists between members of that organization and members of the Special Tool, Die and Machine Shop Industry, and the mutual need for each other's products, we are glad to have available for the readers of Tool·Die·Machine PROGRESS the figures and illustrations which appear in the booklet. Thus it will reach many industrial officials and department heads who might not otherwise have this advantage.

How would you like to do your work in a kitchen like this? A housewife spent a good deal of her time at hard work in the old kitchen.

Courtesy U. S. Steel

Mechanical servants take the drudgery out of housework. Modern materials make it easier to clean, modern lighting makes it easier to see.

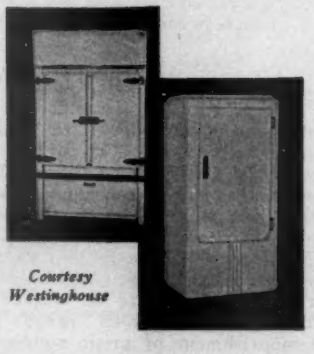
Courtesy Westinghouse

In Your Home

"Home is more than a place to hang your hat. It is an institution, a business enterprise, and an educational organization. It is what all of the members of the family make it. But always Mother remains the focal point, the heart, the regulator of the pulse—and of the purse.

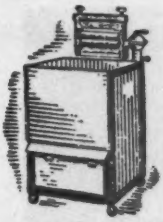
"The Machine Age has helped to transform Mother from a kitchen drone to this new, more exalted, more important executive position. And like all good executives, Mother has an opportunity to enjoy leisure—to sit in the living room, to attend club meetings, to take her part in the issues and pleasures of the nation.

"How would Mother get along today without the 'luxuries' pictured here—and the many other aids and conveniences with which the factory provides her?"



Courtesy Westinghouse

"Less than a dozen years ago when only about 200,000 domestic refrigerators were produced in a year, the average price was $400. When modern methods raised production to 2,000,000 a year, the average price dropped to $163.00 for a better refrigerator."



1924

Courtesy Sears Roebuck

1937

"The washing machine has freed the housewife from the drudgery of washday. No longer is Monday 'Blue Monday.' And today, washers are cheaper and better than ever. The 1924 washer shown here cost $142.85. The 1937 washer, better made and more efficient, is listed in the catalog of a large mail order house at $64.50."

1924

Courtesy Sears Roebuck

1937

"What a miracle we thought radio was back in the days when any old sound was marvelous so long as we got it out of the air. Remember the squawks and static you could tune in with this dandy set priced at $198.75? Today's efficient radio equipped for foreign and domestic broadcasts, affording selectivity and modulation of tone, costs as low as $19.95."

Courtesy Ford Motor Co.

On the Open Road

"Cars like this were once almost as rare as a painting by a master . . .

"Do you remember how envious the bystanders used to be when a 'quality' car drove down the street? In those days the owner of any car was set apart as a privileged person."

"Today all cars are 'quality' cars. Even those in the lowest price class are more comfortable, faster, and far safer than the best of a generation ago. Today millions of us are members of the privileged class.

Courtesy Plymouth Motor Corp'n.

"In 1909 the average wage in the automobile industry was 25¢ per hour, today it is 80¢ per hour. In that same year only 100,000 cars were built and about 80,000 persons were employed in their manufacture. Today 4,000,000 cars are produced in a year, and 400,000 persons are employed. This of course does not include the millions who are employed in the service industries—in garages and filling stations, or in the related industries, such as steel, rubber, leather and many others.

"To produce a better car at a lower price and increase employment at a higher wage is the miracle wrought by modern machine tools."

In the Store

Courtesy Underwood & Underwood

"As against 80 hours a week in 1854, the standard now is 40.

"As against a weekly wage of three dollars, girls now working in five-and-ten-cent stores in New York have a minimum wage of $15.60.

"As against 5,000,000 employees as recently as 1920, today 7,000,000 earn their living in the 'distributive services'."

Courtesy Progressive Grocer

"And the consumer? Thanks to 'The Machine Age' you can telephone your order or you can ride to the store by auto, street car or bus. In no phase of human existence does the machine add so much to health and happiness as in the manufacture and sale of the things we use in our daily lives."

The gas light era. Long hours of work done by hand in uncomfortable surroundings.

Modern equipment means more work in less time, with a minimum of fatigue.

Courtesy International Business Machines Corp.

One of the world's leading department stores has just issued their 1937 book of rules for employees. They quote the following from a very old book of rules, issued way back in 1854:

"THE FOLLOWING RULES WILL BE PUT IN FORCE AT ONCE"

"Store must be opened promptly at 6 A.M. and remain open until 9 P.M. the year around.

"Store must be swept: counters, base shelves and show cases dusted. Lamps trimmed, filled and chimneys cleaned; pens made; doors and windows opened; a pail of water, and a scuttle of coal must be brought in by each clerk, before breakfast if there is time to do so, and attend to customers who call.

"Store must not be opened on the Sabbath Day unless absolutely necessary and then only for a few minutes.

"Any employe who is in the habit of smoking Spanish cigars, getting shaved at a barber shop, going to dances and other such places of amusement, will most surely give his employer reason to be suspicious of his integrity and all around honesty.

"Each employe must pay not less than $5.00 per year to the church and must attend Sunday School every Sunday.

"Men employes are given one evening a week for courting purposes, and two if they go to prayer meeting regularly.

"After 14 hours of work in the store, the leisure time must be spent in reading good literature."

In the Office

"Gone are the days of eye strain, brain fag, and backbreaking hours standing at a high desk. The modern office worker spends his working hours in a well lighted, properly ventilated room. His surroundings are designed to promote his efficiency and accuracy by avoiding fatigue.

"With modern equipment have come shorter hours, higher wages, and a great increase in the number of office workers employed.

"Because physical strength and endurance are no longer at a premium women are finding suitable employment in this type of work. It would be impossible to handle the volume of business of a modern corporation without the use of modern office machines. The fast and accurate handling of office details is as essential as the smooth working of the productive equipment in mill and factory. Letters, invoices, telegrams and reports —the lifeblood of commerce and industry—flow unrestricted through the modern office.

On the Wings of the Wind

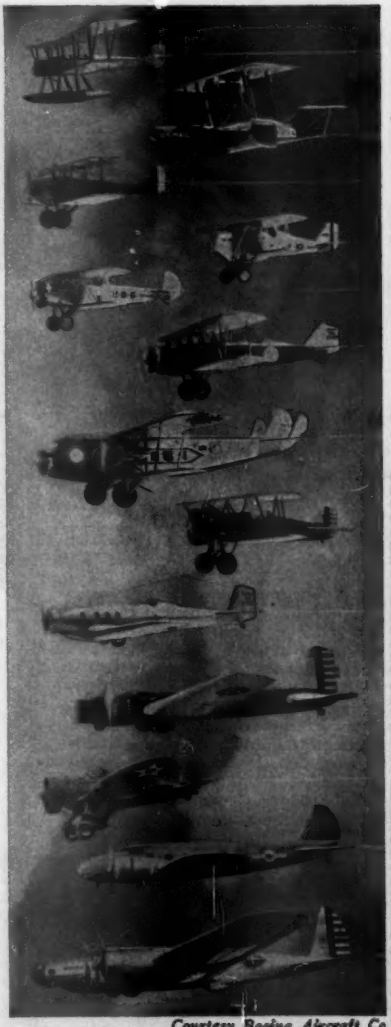
"Aviation is one of our very young industries. It is only a matter of 34 years since the first successful flight was made by the Wright Brothers at Kitty Hawk, N. C., at which time they kept their plane in the air the amazing time of 12 seconds. Most of us have seen the advance of this industry from this meager beginning to today's huge transcontinental planes which carry both passengers and freight. And now trans-oceanic flight is a reality. The famous 'clipper' ships, carrying mail and passengers have successfully flown the Pacific. This fall it is hoped that trans-Atlantic flights will start.

"Airplane engines must not fail. Extreme standards of accuracy are set. The parts are held to a tenth of a thousandth part of an inch.

"The planes pictured on this page show the progress in design and structure from the plane of 1916 to that of 1935.

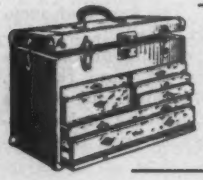
"The airplane industry is not yet producing in any large quantities, but today's methods and machines give us well built, speedy planes providing fast transportation at reasonable prices.

"Employment also is steadily on the increase. In 1914 there were 222 persons engaged directly in the manufacture of planes and parts. By 1935 there were 11,384 engaged in manufacture and an additional 8,000 employed in operation of scheduled air transport."



Courtesy Boeing Aircraft Co.

PRECISION WORKMANSHIP
TOOLS ● DIES ● JIGS ● FIXTURES
PRODUCTION JOB WORK
SPECIAL MACHINERY ● STAMPINGS
ROCKFORD DIE & TOOL WORKS, Inc.
1916 Seventeenth Ave. · MAin 3084 · Rockford, Ill.



Help Your Men to Help You! • • •
When you encourage your machinists, tool, die and pattern makers to care for their good tools in a *Gerstner* High Grade Tool Chest, you will be repaid with increased output and with a better quality of work. . . . *Help the men choose their chest from Free Catalog.*
Gerstner Tool Chests • 56 Columbia Street Dayton, Ohio

When you order or write about products described in TDM PROGRESS please mention the publication.

Courtesy National Acme

In the Factory

How would you like to work in a place like this? Fortunately there are very few shops like this one today. This is the way machine shops looked 30 or 40 years ago. You will notice that there is no evidence that any thought was given to safety, comfort, convenience or proper light.

"What a difference we find here! The shop is roomy, well lighted and ventilated. The building is designed to admit a maximum of daylight through its many windows. Well placed electric fixtures give ample light on dark days.

"The men in the lower picture are well dressed and alert. They are like their shop . . . clean, efficient and modern."

Courtesy Goddard & Goddard

Everywhere

"In the dawn of history man furnished his own power. To break the earth he dug at it with a crooked stick. Today man has been freed to act as a guiding intelligence—more and more the power required comes from a machine.

"Machinery does not enslave—it emancipates! It doesn't empty pockets and stomachs and hearts—it fills them! The job of machinery is to end drudgery—and it is making headway, particularly in America where there is less backache than anywhere else in the world.*

"No nation in history has come so near to assuring to every man those 'unalienable rights: life, liberty and the pursuit of happiness.' No other nation has done so much to extend human life, and to enrich it. By increasing the amount that each worker can produce, American industry renders a double service. For the price to the customer is kept within his reach, yet the worker is paid more for his labor. And since each worker is a 'customer' he can afford not merely the necessities of life, but its luxuries as well, and in ever-increasing measure.

"In the home, on the farm, in office and factory, the machine and the products of the machine make work easier and more pleasant. And when we are at play we use the automobile, the radio, or we watch the movies—all products of the machine, which are brought within your reach and mine because we live in the machine age.

"There is no way in which we can retain human freedom and continue to extend human happiness, to bring more things and better things to more people, save one: the increased efficiency of industry that increases the output of each worker."

*Link-Belt Co., Advertisement, Fortune for October, 1937.

They Can't Be . . .
BUILT OVERNIGHT

In designing, developing and building Special Tools, Dies, Machines and the many other precision specialties produced by TDM Industry Shops, the "short-cut" and the "speed-up" have little or no meaning.

New equipment and better methods have reduced the hours required for some operations but Tool and Die Making still are long on head and hand work. Their production can't be stepped up like a machine's.

Some Tool-Die-Machine builders are having a breathing spell. Now is the time therefore for production manufacturers to avail themselves of their facilities. Engineers, designers and all skilled men can now work under less pressure with all-around good results.

Now is the time to call in Contract Tool, Die and Machine Builders for estimates on equipment which will be needed later. Don't wait until all shops are "loaded to the gunnels" again, when everyone will want everything overnight. *It just can't be done.*

SPECIAL TOOL, DIE & MACHINE SHOP INSTITUTE

A NATIONAL TRADE ASSOCIATION

This advertisement is one of a series intended to describe the TDM Industry.

When you order or write about products described in TDM PROGRESS please mention the publication.

Automobile Manufacturers Have Never Let The Country Down

An Editorial

EVERY day it is becoming increasingly evident that our automobile manufacturers are not going to be caught napping if the 1938 models with their comparatively unimportant design changes tend to reduce sales and output. Already there are reports that 1938 models do not present in appearance or improved mechanical features very valid reasons for relinquishing 1937 cars.

If there had not been a falling off in buying in almost all lines, the possibility exists that the back log of orders which had accumulated during the closing days of 1937 model production, would have carried over to the new models, which would have justified the decision of car manufacturers in making such inconsequential changes.

It is not like the courageous and far-seeing members of America's outstanding industry to disregard storm warning signals. Also it is not customary to begin designing new models before production of a current model has really gotten under way but that is what is said to be happening today and there seems to be excellent justification for believing that it is. Within the last few weeks one TDM contract shop received complete detail prints and an order for the dies required for a brand new model. In another instance a TDM Industry member was called in for advice as to the feasibility of building dies to accomplish something quite different in the way of a metal body stamping.

Two of the larger subsidiary production units of the automobile industry have within the last few weeks conferred with contract die builders and have indicated quite positively that they may shortly expect to be asked for estimates on dies which it would seem cannot be in the design stage for other than new models to be brought out in the comparatively near future.

Perhaps the success of Willys-Overland's small car and the advent of the new American Bantam in the $400.00 class will re-inspire talk of Chrysler's and Ford's smaller models which periodically are mentioned as possibilities. The interesting new Zephyr and the lines of the Graham Super Charger for 1938, although both are cars in the lower production brackets, can very well encourage other automobile manufacturers to pull out those advanced style designs which had been laid away for the day of more certain acceptance. It certainly does seem likely that with Walter P. Chrysler's pioneering of the ultra stream lining of the original Air-flow his company would not still have some more surprises in the box.

We have been accustomed for years to look to the automobile manufacturer for sound ideas of manufacturing and selling upon which to build new eras of progress. Some may recall that the Republican party once talked about "two chickens in every pot" which we doubted but devoutly hoped for, but certainly all of us remember how enthusiastically, even avidly we tried to conform to the automobile industry's suggestion of "two cars in every garage."

We firmly believe that this time, as in previous years, automobile manufacturers will find ways and means to prevent a lowering of production schedules to the point where business will be seriously affected and public confidence again lost. They may not be miracle workers but they are the men of industry who had the courage to reverse the usual industrial procedure of developing a design and continuing its production almost without improvement as long as it was possible to sell it. The scrapping every year of tools, dies, machines and equipment to the value of millions of dollars because new styles, new designs and improved mechanical parts require new materials, tools, dies and machines to fabricate them is undoubtedly one of the great contributing factors to normal industry and business activity in our country. We believe that the automobile manufacturer is preparing right now to take the steps necessary to keep machines operating and men employed not alone because he believes he must meet competition but, as in the past, because it is his conception of the right thing to do.

PRECISION PAYS

THERE'S ONLY ONE YOU CAN SELL ME— THE PRECISION SET

DANLY DIE SETS AND DIE MAKERS' SUPPLIES
From the 8 Danly Branch Office Stocks

BRANCHES:

LONG ISLAND CITY, N. Y
36-12 34th STREET
DETROIT, MICHIGAN
1549 TEMPLE AVENUE
CLEVELAND, OHIO
1745 ROCKWELL AVENUE
DAYTON, OHIO
990 E. MONUMENT AVENUE
PHILADELPHIA, PA.
3913 N. BROAD STREET
ROCHESTER, N. Y.
16 COMMERCIAL STREET
MILWAUKEE, WIS.
513 EAST BUFFALO STREET

● Those firms that use stampings to the point that they are major items in cost, long ago learned the value of the Danly Precision Die Set.

They know that precision pays, in the freedom from shearing, less regrinding and, above all, insurance against die destruction and production line tie-ups.

Precision Pays—make sure you get it by specifying Danly Precision Sets for mounting all your dies.

DANLY MACHINE SPECIALTIES, Inc., 2121 So. 52nd Ave., Chicago, Ill.

DANLY DIE MAKERS' SUPPLIES

When you order or write about products described in TDM PROGRESS please mention the publication.

ESPECIALLY WHEN YOU MEASURE IT IN PRODUCTION MINUTES

DANLY DIE MAKERS' SUPPLIES are made to the same type of standards as Danly Precision Die Sets to give better service and save time.

In Danly Dowel Pins, Cap Screws, Springs and other items you find close accuracy in manufacture, and other qualities that mean money saved in their application and in their use.

Dowel pins accurate to ±1/10,000 and of uniform straightness end to end.

Knurled Socket Head Cap Screws are driven home faster and easily locked.

Stripper Bolts are absolutely accurate in their standards and will not work loose.

Springs coiled from the special keystone section wire, with strength and clearances uniform inside and out.

Precision Guide Posts and Bushings —are the same as used in Danly Precision Die Sets.

Clamps of Forged Steel for less than the cost of a plain steel block can be cut to size and drilled.

Precision Pays—Specify Danly Die Makers' Supplies on all your dies and tool work.

Danly Die Sets and Die Makers' Supplies from the 8 Danly Branch Office Stocks.

BRANCHES:

LONG ISLAND CITY, N. Y. . . . 36-12 34th STREET
DETROIT, MICHIGAN . . . . 1549 TEMPLE AVENUE
CLEVELAND, OHIO . . . 1745 ROCKWELL AVENUE
DAYTON, OHIO . . . 990 E. MONUMENT AVENUE
PHILADELPHIA, PA. . . . . 3913 N. BROAD STREET
ROCHESTER, N. Y. . . . . 16 COMMERCIAL STREET
MILWAUKEE, WIS., 513 EAST BUFFALO STREET

DANLY MACHINE SPECIALTIES, Inc., 2121 So. 52nd Ave., Chicago, Ill.

DANLY DIE MAKERS' SUPPLIES

When you order or write about products described in TDM PROGRESS please mention the publication.

A letter, very recently received from a local division of the Special Tool, Die & Machine Shop Industry, cannot help but be of interest to individual manufacturers and industry groups everywhere. The letter has to do with the age-old problem of "cut-throat" competition and we quote from it:

"When the Code (NRA) was ruled out, the local organization soon went out of existence, and the different shop owners went merrily on their way cutting each other's throats, and taking work at a price which left no profit.

"Recently, some of our larger shops have been forced out of existence, so that the remaining shops have come to realize that unless they get together, increase the hourly rate charge, and take their work at profitable price, they, too, will be forced out of existence. For this reason the local owners have recently held a couple of meetings, and have decided to start another association, and have asked the writer to help them get going.

"They seem to have a better start than ever before, and we are anxious to see them grow."

It is a highly regrettable occurrence when members of an Industry must operate their businesses under conditions which hold out only eventual failure. Usually such conditions are the result of a combination of circumstances which include the determination of a minority in that district to get business at any cost, a lack of understanding of cooperation and realization on the part of the majority that such selfish and pernicious circumstances can be at least controlled, if not entirely eliminated, and finally the unwillingness of one or more industry executives to assume leadership in an effort to correct the practices which are responsible.

We know of men to whom the word cooperation is an anathema; they are individualists of the most rugged type. Now, we believe in individualism in this country of ours, and we realize fully that it has contributed no little to our success as a nation, but it is becoming increasingly apparent that in certain circumstances cooperation between "individualists" for the benefit of *all* is not only desirable but absolutely necessary if even these "individualists" would hope to exist.

Wage Surveys an Important Factor in Establishing Better Competitive Conditions

By GEORGE J. HUEBNER

When competitive practices bring continually recurring losses until businesses fail, there can no longer be any question in the minds of these competitors but that cooperation of some form and to some degree is the answer to their prayer for relief. And, someone must have the courage of his convictions to take the initial step to bring about such cooperation.

In an industry where there is little or no similarity of products, where every piece of work is different from the one which preceded it, it is difficult to work out formulas for "costing" and, of course, it is wholly out of the question to establish list prices as in the case of standard products. But there are very definite steps which can be taken to assure operating conditions which are so similar that they constitute a foundation upon which may be built equality in competition.

In a skilled worker industry, like the building of special tools, dies and machines, wages constitute a major part of the cost of production. Isn't it logical then that variations in these wages, as paid by different shops, provide one of the principal openings through which competitive inequalities can come into the picture? A shop which is paying an average rate of wage of $1.25 per hour is handicapped to the extent of 25% over the shop which has an average rate of $1.00 per hour. Another factor which is just as important is that of the workers' hours. The manufacturer who is operating on a weekly schedule of 40 hours at the basic rate and is required to pay one and a half times that rate for hours in excess of these is immediately at a disadvantage with the shop where employer and employee agree to work 45 hours per week at the basic rate.

(Continued on page 40)

Die Estimating

By WILLIAM M. PHARES

So many requests have been received for further information concerning the School of Tool and Die Estimating described in the October issue of T·D·M PROGRESS *that we have prevailed upon the author to prepare a series of class room visits explaining in detail the methods and processes involved. These articles will appear monthly in the pages of* T·D·M PROGRESS.—THE EDITOR.

BEFORE attempting to predetermine the cost of building any die it is necessary for the estimator to first visualize the construction of the die and to draw a mental picture of the various operations required to complete each component part, and the assembly of these parts into a complete mechanism. This ability to "see through" the job can only be acquired through a thorough knowledge of the uses and functions of dies and their proper design and construction.

Ordinarily the estimator is called upon to estimate the cost of the die from a piece part drawing or even a hand made sample of the part required. Even where a detailed drawing of the die is furnished this fundamental knowledge of die design is extremely helpful in arriving at the proper cost figure.

Before going into the subject of die design let us consider for a moment some of the many uses and functions of the die and its variations.

Dies have been called, and rightly so, the "Keystone of Industry." Without them, modern methods of manufacture would be impossible. Can you imagine anyone building an automobile or a radio without the aid of dies?

Dies may be divided roughly into two major classifications—cutting dies and forming dies. The variations of the two types are many but they may be generally classified according to the following functions:

CUTTING DIES
- Piercing
- Shear cut-off (no scrap)
- Notching
- Simple blank (no perfs)
- Cut off (scrap)
- Two step progressive (perf and blank)
- Progressive (more than 2 steps)
- Simple compound blank (no perfs)
- Compound perf and blank
- Trimming
- Shaving

FORMING DIES
- Single "Vee"
- Double "Vee"
- Block and pad
- Single side block and pad
- Simple embossing
- Shallow draw
- Deep draw
- Curling
- Side-action Form

We shall analyze each of these types or varieties in turn giving consideration to their proper uses, functions and construction. In each case we will find that the ideal design will be governed largely by five major factors, namely:

1. Shape of the part
2. Material to be used
3. Quantity desired
4. Accuracy required
5. Type of press to be used

It is obvious that if our piece part is of simple character, to be made of light weight cold rolled strip and that about five thousand pieces are required with generous tolerances specified, the die will be of much less expensive construction than if the piece part is to be made of stainless steel, two hundred thousand stampings required and very close tolerances specified.

The designer must give careful thought to all of the conditions surrounding the job if he desires to create the most suitable and economical die for the purpose.

It can be readily seen that a vast responsibility rests on the shoulders of the designer. On his wisdom and efficiency, depends to a large degree, the profit of the manufacturer. If his design is faulty or if he has failed to provide sufficient strength where strains are severe, the die may break down resulting in loss of time, necessity of die

(Continued on next page)

SPECIAL TOOL, DIE & MACHINE SHOP INSTITUTE
CHICAGOLAND

Reported by WILLIAM M. PHARES, *Secretary*, Chicago Division
KARL HARIG, *President* E. W. FRITZELL, *Vice President* CARL DANIELSON, *Treasurer*

Chicago District Meeting

MEMBERS of the Special Tool, Die & Machine Shop Institute, Chicago District, spent a very profitable evening together on Thursday, October 21, 1937. After an excellent dinner at the Midwestern Athletic Club, they listened to a splendid talk by Mr. C. Hilding Anderson, well known sportsman and prominent Chicago attorney. Mr. Anderson's subject was "Can America and Its Institutions Survive?" His answer was emphatically affirmative, and was backed up by sound arguments.

Following Mr. Anderson's talk, the members were treated to a trip to Bermuda via the motion picture route. Some of the films were in color, and fully portrayed the exotic beauty of this island paradise. All of the photography was excellent. This important feature of the evening's entertainment was contributed by our old friend, Herman Siemund, of the Greenview Mfg. Co. Although Mr. Siemund unfortunately could not be with us as he was out of the city on business, his son, Herbert, did a very good job of pinch hitting, by prefacing the exhibit with an interesting verbal outline of the history and topography of this great playground.

News of the Bowlers

WELL, the bowlers are at it again, and as usual, it is a merry melee. It is difficult to state who is on top because by the time this report reaches you there will probably be a new leader, the leadership having changed every week so far. Regardless of who is ahead, however, the boys are having a lot of fun and are knocking down a lot of wood. If you enjoy a laugh or a thrill, come up to the Cinderella Bowling Alley at Central and Madison Streets any Monday night from 6:30 to 9:00 P.M. and watch the friendly enemies battle it out.

Die Estimating

(Continued from page 29)

replacement or repair, and consequent sharp increases in cost of manufacture. Even in the face of this danger, however, the designer must ever be alert to the cost of construction of the die and strive for the most economical construction which will efficiently serve the purpose.

We will first consider the simple piercing die.

(To be continued in the December Issue.)

Made Tools and Dies for First Dodge

THE four-millionth Dodge automobile came off the assembly line recently. It stirred memories of the year 1914 when the first car bearing the Dodge Brothers name was driven off an assembly line attended by just twelve men.

Among Dodge employees of that day was F. J. Lamborn, a tool and die maker. Today, about 23 years later, Mr. Lamborn is a vice president of the corporation and he is in charge of all Dodge manufacturing.

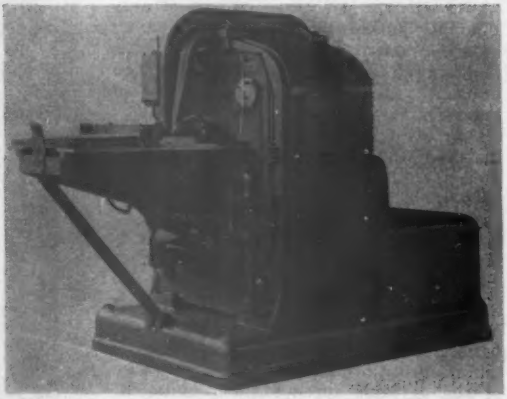
In the Dodge division of the Chrysler Corporation there are almost 500 other employees who have been with the firm since its inception. 68 is the average age and 25 years time average employment period.

Hamilton Mill Cut Rotary Files
Eighteen standard shapes and sizes made up in five different cuts. Adaptable for all classes of work and for all kinds of materials. Try them on your next job.
Circular and price list on request.
THE HAMILTON TOOL COMPANY
220-248 North "B" Street Hamilton, Ohio

SPECIAL TOOL, DIE & MACHINE SHOP INSTITUTE
NORTHERN OHIO DIVISION, *Cleveland, Ohio*
Jos. H. Lyons, *Pres.* W. L. Warrander, *Vice Pres.* E. P. Hahn, *Sec'y-Treas.*
Meets every Wednesday for luncheon, 12:15 P.M., Allerton Hotel

Automatically Converts Flat Steel Sheets Into Lapped Seam Cylinders

A SPECIAL-PURPOSE machine which converts flat steel sheets into lapped seam cylinders at the high production rate of 1,000 to 1,200 per hour. The hydraulically operated feed is automatic and positive. The machine's construction is unusually rugged to withstand continuous operation for long periods. With comparatively minor design changes the machine is adaptable to the manufacturer of cylindrical sheet metal shells of many sizes.



For more detailed information write The McKinney Tool and Manufacturing Company, 1688 Arabella Road, Cleveland, Ohio.

YOUR WORK CAN BE NO MORE ACCURATE THAN YOUR MEASUREMENTS
JOHANSSON GAGES, accurate to ±.000008 inch, can be purchased singly or in sets. Prices range from as low as $3.50 for individual blocks. A set of 5 gage blocks which will make 31 gages in steps of .0625 inch —from this minimum size up to 1.9375 inches— can be obtained for only $26.50. At such a low price, no shop can afford to check its working gages by any standard less accurate than Johansson Blocks.
Manufactured and serviced in U. S. by
FORD MOTOR COMPANY
JOHANSSON DIVISION
Ford
DEARBORN MICHIGAN

SPECIAL TOOL, DIE & MACHINE SHOP INSTITUTE
TOOL MANUFACTURERS' ASSOCIATION, *Dayton, Ohio*
J. F. DEIBEL, *Pres.* E. H. JOHNSON, *Vice Pres.* G. J. CAPLISKI, *Treas.* H. L. NIELSON, *Sec'y*

The Speedmaster—Variable Speed Transmission Unit

ANNOUNCEMENT of a new transmission unit providing a wide range of speeds is made by The Speedmaster Company of Minneapolis, Minnesota. The unusually great variation of speeds is an important feature of the "Speedmaster." As an example, in the unit herewith illustrated the output shaft may be operated at 90 RPM at its lowest speed and 4300 RPM at the high speed. This is a ratio of more than 45 to 1 and interest is heightened in it by the fact that it is accomplished in a relatively small, compact unit.

Standard "V" belts run over adjustable bakelite pulleys and the alignment between belts and pulley is automatically maintained throughout the entire range of the variable speed ratio adjustment. The fact that these "V" belts run over bakelite pulleys with their ultra smooth surfaces is a feature which assures maximum belt life. Standard makes of belts are adaptable, thus making replacements when necessary both simple and inexpensive.

Speed changes are governed by a hand wheel on the side of the cabinet which operates a toggle lever acting on the pulleys. A speed indicator is built into the unit and has a dial conveniently placed for easy reading. It has an accurate motor which may be depended upon to show the exact speed at which the output shaft is operating at any moment.

The output shaft may be coupled directly to the unit of equipment which is to be driven, or a "V" belt may be used on the pulley shown in position on the shaft, in the illustration.

Instead of the motor or power units, the transmission mechanism and driven device being strung out in a straight line arrangement, the "Speedmaster" is a completely contained, compact unit which operates with great efficiency, is substantially trouble-free and comparatively inexpensive.

The unit illustrated has a ½ HP motor mounted on the top but this may be

placed in other positions on the housing or even on the inside, in which case the entire unit may form a base or leg for the machine which it drives. The "Speedmaster" is available in various sizes and the manufacturer is prepared to engineer special designs for specific applications.

In this new wide range transmission built as a complete unit, there would seem to be an ingenious method for propelling the many devices and types of equipment which require infinite speed selections from very slow to very fast. Although the unit has a ratio of more than 45 to 1, it is decidedly not necessary to confine the use of the "Speedmaster" to these extremely wide range applications, its functioning being equally effi-

(Continued on page 44)

MODERN TOOL ROOM EQUIPMENT

GROB Bandsaws and Chain Filers — over 250 in our territory.

HAMILTON Elevating Tool-tables and Rotary Files.

MAGNA-SINE Magnetic Sine Tables.

MOORE Precision Jig Borers.

● *Write or phone for detailed information*

BRETT MACHINERY COMPANY

1 No. Crawford Ave. Chicago, Ill.
Phone: Van Buren 7878-7879

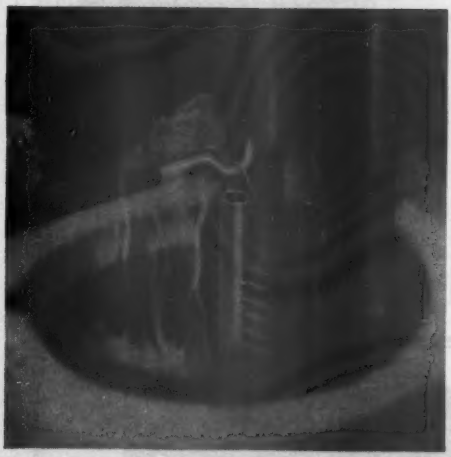
SAFETY WHEELS - *Are Preferred for Tool Rooms*

LITAN	For Cool and Rapid Cutting
#99 WHITE	For Alloys—Hard and Soft
#99 PINK	For Carbon Steels—Hardened

For general purpose tool room work, wheels made of our #9 Rex or #109 Rex cut as well and last longer and are less expensive than the highly refined abrasives mentioned above. These wheels are made in all sizes and standard shapes; also of any practical grain and grade specifications.

The SAFETY GRINDING WHEEL & MACHINE Co.
2483 COLUMBUS AVE. SPRINGFIELD, OHIO

When you order or write about products described in TDM PROGRESS please mention the publication.



Salt Bath Method for Heat Treating Tools

ONE of the important developments of recent years for providing longer life and more efficient performance of cutting tools has been the introduction of the salt-bath method of heat-treating. With other leading manufacturers, the Putnam Tool Company of Detroit, Michigan, has adopted this process for general use and now employs it for the hardening of its entire line of Hi-Speed end mills, counterbores, reamers and special tools.

This method consists of successive submersions of the various tools in salt baths in which uniform temperatures are maintained constantly by special electrical controls. The first illustration—Fig. 1—shows the four furnaces of graduated heats. The first two enclose the salt baths used for preheating at temperatures of between 1500 and 1600 degrees. The third bath is for high heating at 2300 to 2350 degrees. The fourth, or quenching bath, is held between 1100 and 1200 degrees.

Fig. 2 shows a typical submersion of Putnam End Mills. The tools are inserted in tubes specially perforated with holes of approximately the same diameters as the shanks of the end mills. The tubes are suspended from rods with hooked ends and then completely submerged in the salt bath. The period of submersion is carefully timed during each step of the process.

Each salt bath is held at a constant temperature by an efficient electrical control system.

After submersion in the quenching bath, the tools are allowed to cool in still air. They are then placed in wire baskets and placed in the Homo Electric Furnace—Fig. 3—and treated in a temperature of between 1025 and 1075 degrees.

When removed from the tempering furnace, the tools are taken to the special blasting chamber, and are finished individually with minute particles of steel shot which are sprayed under high air pressure. Fig. 4 shows the interior of the blasting chamber, with the operator

holding a Putnam End Mill under the shot blast, and viewing the operation through a glass opening.

The controlled hardening method of salt bath submersion offers several definite advantages. As each tool is completely submerged in the solution, and heated in a perfectly neutral atmosphere, there is no possibility of oxidizing or scaling. No decarburization occurs. And, as every portion of each tool reaches the same temperature at exactly the same time, there is no distortion.

This process has proved highly successful in the treating of both standard high speed steel and molybdenum steels. With the latter, finished tools, hobs and forming cutters can be hardened without any pitting or soft skin. When used with any high speed steel, a more uniform hardness is assured on both thin and heavy sections, angles for threading tools are protected, and size change is held to a minimum.

ECONOMICAL BUILDING

of Intricate Precision Machines calls for perfectly balanced, efficient plant equipment . . . we have it . . . plus

EXPERIENCE

. . . 25 years of it.

Products we build meet every specification.

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CARBOLOY TOOLS

We design and manufacture all types.

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Move heavy dies, jigs and fixtures more quickly, economically and safely

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HAMILTON PORTABLE ELEVATING TABLE

Eliminates costly mishaps and breakage . . . Is a labor saver because it requires only one man to handle . . . Two Sizes: 2,000 pounds and 5,000 pounds.

Write for circular and prices.

THE HAMILTON TOOL COMPANY

222 North B Street Hamilton, Ohio

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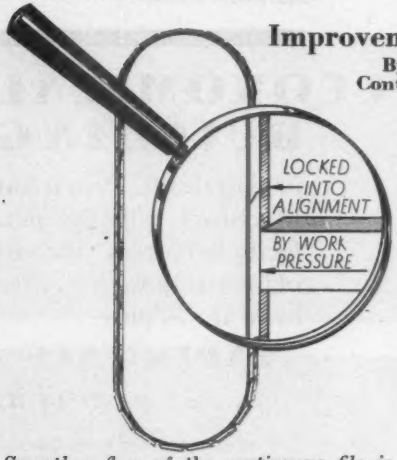


Smoother flow of the continuous file is one feature of the new DOALL self locking file band.

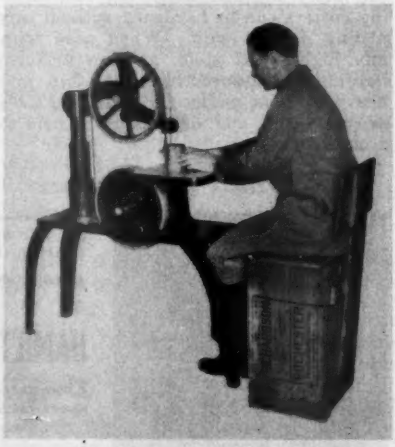
Improvements In Continuous Filing

By R. J. WILKIE, Vice President
Continental Machine Specialties, Inc.

A NEW, improved file band has recently been developed by the manufacturers of the DOALL combination sawing and filing machine. The new file is made up of short file segments mounted on a flexible steel band as before, but the ends of the segments are form ground to interlock with each other in such a way that the cutting surface flows past the work with entire elimination of jog between the segments. The new file band accomplishes a new smoothness of flow of cutting with a locking miter principle, on the order of a helical gear tooth construction. Under this principle the file segment, subject to pressure at any given moment, is automatically locking and lining up the next segment. The common practice in abrasive bands is to put a diagonal lap wherever there is a joint. However, with this practice in band filing there is still a tendency for the file segment having the pressure at the point of work to put the oncoming file segment out of line. The new interlocking construction eliminates this difficulty by locking each segment in line instead of forcing it out of line. The effect created is a steady flow of uninterrupted, constant cutting edge. Holes in the front face of file segments are eliminated thru a new method of riveting them onto the flexible band. Thus this new band gives

(Continued on page 37)

This continuous filing machine—an early product of Rockford Drilling Machine Co., was put aside when it began building clutches for machine tool and automotive trades.



Patented by Mr. J. T. Moar of Albany, Wisconsin, and used for making Oliver typewriter dies from 1905 to 1909, this continuous filing machine was years ahead of its time.

Atlas Press Expands

Increased demand of bench lathes, shapers, drill presses and arbor presses has made it necessary for Atlas Press Company, Kalamazoo, Michigan, to enlarge its factory floor space. 15,000 square feet have been added in the new addition which has recently been completed.

(Continued from page 36)

a perfectly uniform, as well as continuous file surface.

The Original Band Files

The original band filing machine which gave a continuous flow of cutting edge was patented by G. Storer of New Britain, Connecticut, June 19, 1860. This was followed by an "endless belt filing machine" patented by G. H. Stephens of Riverton, Connecticut, on June 18, 1881. These far-seeing inventors were ahead of their time as far as the market for their machines was concerned. It was not until many more patents were granted on band filing that machine shops began to accept the idea.

Even the successful band filing machine put out by J. T. Moar of Albany, Wisconsin, in 1906, was born years too soon. The Rockford Drilling Machine Company manufactured a band filing machine having file elements mounted on a chain, as patented by Mr. Anderson, but the company branched into other fields before going very far with this machine.

The popularity of the filing function of the DOALL machine had rapid growth because of the fact that the machine could saw and polish as well as file, and thus could take the job right through to completion.

File Types

The Bureau of Standards, in November 1923, set forth a reduced variety of forms for the file, which is now the accepted standard. Varied shapes and styles of files are distinguished by certain names, such as flat, crossing, half-round, etc. The cut of the file is divided with reference to the character of the teeth into single cut, double cut, rasp cut, etc. With reference to the coarseness, files are divided into rough, coarse, bastard, second cut, smooth, etc. These simplified standards and means of classification are generally accepted throughout the world, and American manufacturers lead the industry today.

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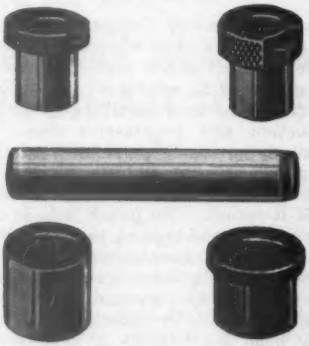

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We also Specialize in Complete Machine Part Manufacture Requiring Extremely Close Limits, Lapped Fits, etc., for Pressures up to 15,000 lbs. per Square Inch.

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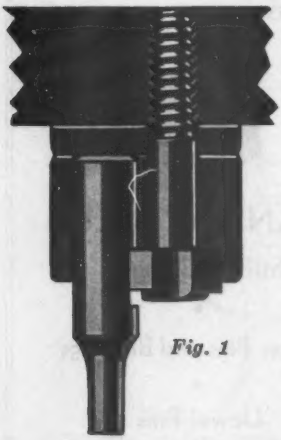

Fig. 1

Hovis Announces New Line of Standard Retainers

Hovis Screwlock Company announces the addition of a new series of square hardened steel punch and die retainers. These new S-R retainers are made of case hardened steel particularly for high production and progressive dies. The patented Screwlock principle of locking the punch is used and the punches are identical with those regularly made for the R-R series. The punch hole is carefully ground and lapped, the diameter of the lock-screw counterbore being also ground to closely fit the screw head diameter which is also ground. The center distance between the punch hole and the screw head counterbore is held to very close limits to insure properly locating irregularly shaped punches by their screw heads.

With the Screwlock principle the punch is held in place by a special alloy steel hollow head screw which passes directly through the retainer and into the punch shoe—Fig. 1. This insures a direct stripping or retaining action from the punch to the shoe, thus the retainer itself becomes a means of locating the punch and no strain is applied which has any tendency to move it.

It will be observed in the illustration—Fig. 1—that the shoulder on the punch into which the screw head locks is at an exact right angle with the axis. Thus the punch operates with little or no lateral movement and with practically no side thrust. Properly heat treated punches held in this retainer will pierce and strip metal of a thickness comparable with any known method of holding piercing punches.

Punches are easily removed and just as readily replaced. One side of the screw head is milled sufficiently to permit withdrawal of the punch when the screw is revolved to the proper position.

Because of the Screwlock type of construction, Hovis retainers are said to lend themselves particularly to use in group plates. With the new square retainers it is possible to make unusually close groupings because they are built with the punch close to one corner thus assuring all of the advantages of both the square and end type retainers. For compound dies which require that punches be mounted close to die sections the Screwlock design is extremely advantageous because with it less room is required than with the longer narrow end type retainers.

The Hovis Company, in a letter to die builders and users, claim records as high as 12,000,000 stampings from a progressive die with Screwlock retainers and punches used for fabricating brackets from 13 gauge steel.

For circular describing the new S-R series of square hardened retainers, standard sizes and prices, write Hovis Screwlock Company, 3120 Larned Street E, Detroit, Michigan, and ask for Bulletin TD.

• DIES
• JIGS
• FIXTURES

STAR MACHINE & TOOL CO.
9320 Woodland Ave. Cleveland, Ohio
SPECIAL MACHINES SCREW MACHINE WORK
MACHINE PARTS STAMPINGS

When you order or write about products described in TDM PROGRESS please mention the publication.

October Machine Tool Orders

NEW orders for machine tools in October, although lower than any previous month of this year, ran as high in volume as in the best months of 1936. There is a decrease of 28% from September but foreign orders were responsible for there not having been a greater decrease. If there are going to be recessions in home consumption, it is a matter for rejoicing if our foreign business can come to the rescue to such an appreciable extent.

New Magnetic Parallels

MAGNETIC Parallels in two sizes—¾" x 1½" x 3" and 1" x 2" x 4", have been added to the T-P line of set-up tools. These parallels which are made with alternate laminations of brass and steel are magnetically universal in that they may be used on all models of Taft-Peirce Superpower Magnetic Chucks, as well as on all other types of magnetic chuck face plates.

For information in detail write to Taft-Peirce Manufacturing Company, Woonsocket, Rhode Island.

A NEW Socket Screw Wrench Set known as No. 22 has been announced by The Holo-Krome Screw Corporation. The set comes in a reinforced metal box with hinged cover and consists of nine "file hard" surfaced socket screw wrenches which fit all types of hollow set screws from No. 8 to ¾" diameter inclusive; all socket head cap screws from No. 8 to ½" diameter inclusive; all sizes of socket head stripper bolts from ⅜" to ¾" diameter inclusive and all sizes hollow pipe plugs ⅛" to ½" diameter inclusive. The list price is $1.00. Order from Holo-Krome Screw Corporation, Hartford, Conn.

THE REASONS WHY . . .
Putnam Tools Cut Faster—Last Longer

Illustrations show submersion of Putnam End Mills and the four furnaces of graduated heats.

Controlled Hardening
of PUTNAM TOOLS
by the
SALT-BATH PROCESS

TYPICAL of the advanced methods used in the manufacture of Putnam Tools is the heat treating process—the most expensive and up-to-the-minute method in use today. Every tool is submerged in four successive salt baths, in which uniform temperatures are maintained constantly by special electrical controls. This method prevents oxidizing and scaling. No decarburization occurs. As every portion of the tool reaches the proper temperature at exactly the same time, there is absolutely no distortion. It assures the maximum in cutting tool accuracy and durability.

Our catalog lists complete information and prices on Putnam end mills, counterbores and reamers. Write for it . . . TODAY!

PUTNAM
TOOL COMPANY
2985 Charlevoix Ave. • Detroit

Wage Surveys

(Continued from page 28)

THERE are reasons which, in the minds of a particular employer and his employees, perhaps justify them in making an agreement which gives that shop an advantage but such reasons cannot possibly take into consideration the interests of any excepting their own. We can see why the treatment which a particular employer accords his employees may very definitely influence them to agree to a longer hours schedule — perhaps that shop is a more pleasant place to work, possibly it is better equipped or again it may be just a matter of the employees having their choice of working the extra hours at the straight time rate or not working them at all. But for several years there has been a distinct tendency to reduce working hours and to raise wages. The NRA legislation which was invalidated distinctly attempted that, and numerous hour and wage bills which have been before Congress since have the same purpose. Invariably formation of new unions or the strengthening of existent ones is followed by demands for shorter hours and higher rates of wage.

Probably no one will dispute that regulatory measures frequently become necessary because of abuses which sometimes develop in industrial management. If one employer gets his men to work 45 hours per week the next one will try 48 or 50 and soon, with an industry or a group of manufacturers in a given locality, there is established a vicious circle of cut-throat competition. Eventually everyone suffers. Thus is born the argument for cooperation.

After a group of industry executives have agreed to establish among themselves a similarity of operating hours for their shops the next step is to tackle wage surveys. When such a plan was first presented to the members of the local association of which the writer was secretary, it was thought of as entirely too radical but several disastrous strikes in a comparatively brief period of time brought matters to a focus and also the realization that *something* had to be done promptly. The wage survey and the registration of all employees were the steps taken to improve conditions. Information about employees is rightfully considered as very confidential, therefore a wage survey must of necessity be made by one who has no interest in the data submitted other than that of the entire group. A trade association secretary is such an official. The form which the employer fills out should be coded and this designation should be known only to the individual to whom the figures are submitted confidentially. A wage survey form which is being used successfully by local divisions of the TDM Industry and which is adaptable to any similar line of business is reproduced herewith. From these reports as submitted by members the secretary compiles a composite. This shows the total number of workers of each trade or classification employed at each rate. It establishes the average wage paid each group of workers, the wage brackets in which there are the majority of workers and the individual instances where men are paid wages too far out of line with the averages.

It has always seemed to this writer that the wages paid by any one shop should be the concern of all of the shops operating in that industrial area under similar conditions. Rates that are too high upset the balance in one direction, and those that are too low, in another. This is particularly true of those which are too low. Demands made upon such a shop owner to increase his rates have frequently led to a general disturbance among all shops of the Industry.

The composite report gotten out after the wage survey has been made enables the individual employer to compare the wages he is paying with those which are being paid in other shops, but it will be noted particularly that the method used in providing him with the means for this check does not disclose confidential data supplied by any individual competing industry member.

In a given area or industry when business is good and there is liable to be a shortage of workers the figures of a wage survey enable an employer to make certain that his rates are in line to keep his employees satisfied. On the other hand when production declines and men are looking for jobs the wage survey becomes a deterent to wage rate "jockeying" which in justice to workers should not be countenanced.

It need hardly be pointed out that wage surveys periodically made not only

CONFIDENTIAL REPORT OF HOURLY WAGE RATES
ACCORDING TO PAYROLL OF WEEK ENDING

..... Key.....

SPECIAL TOOL, DIE & MACHINE SHOP INDUSTRY, U. S. A.

Instructions: List number of employees in each classification according to wage rates.

DO NOT LIST PRODUCTION MEN IN THIS SURVEY

PLEASE USE INK OR TYPEWRITER

	.75	.80	.85	.90	.95	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60
Boring Mill Horizontal (Die Work)																		
Boring Mill Horizontal (Tool Work)																		
Boring Mill Vertical																		
Die Leaders																		
Die Makers (bench)																		
Die Designers																		
Die Fitters																		
Die Repair																		
Die Try-out																		
Gauge Makers																		
Gear Cutters																		
Grinders																		
Hardeners																		
Inspection and Checkers																		
Jig Boring Machine																		
Jig Boring on Die Work																		
Keilers																		
Lathe																		
Lay-out men																		
Machine Repair																		
Machine Designers																		
Milling Machine																		
Pattern Makers																		
Planers																		
Punch Finishers																		
Radial Drill Operators																		
Scrapers																		
Screw Machine (hand)																		
Shapers																		
Slotters																		
Templet Men																		
Tool Leaders																		
Tool Makers (bench) —Jig and Fixture Builders																		
Tool Crib																		
Tool Designers																		

Form is ruled to show number of workers of each classification and rate.

NOTE

From the individual wage reports submitted by Industry members on this form a composite is prepared. This shows the total number of workers employed in all shops at each rate. Thus the average rate for each trade or classification is available with which an individual member may check the rate he is paying workers of that classification in his shop. The composite also makes available in which wage brackets there are the most workers. This provides the opportunity to determine how many workers are being paid over or below the prevailing rates.

A composite report should also carry a column showing average rates according to a previous survey thus enabling members to make a comparison and determine the exact percentage of increase or decrease.

SEMI-SKILLED AND MAINTENANCE	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	1.00	1.05	1.10
Apprentices															
Semi-Skilled and Superannuated															
Improvers															
Helpers															
Tool Crib															

are important factors in equalizing competition but they cannot help but provide safeguards against labor dissatisfaction. If unreasonable demands are made surveys provide an accurate and dependable record of actual conditions and with them it should be possible to offset claims that inadequate rates of wage are being paid in that particular industry or area. Manufacturers who cooperate in making wage surveys go a long ways toward insuring themselves against labor difficulties because of the very fact that they cooperate in fixing uniform rates of wage that bring about conditions which are both fair and satisfying to their workers.

Manufacturer Offers Prizes for Examples of Unusual Machine Applications

A CONTEST open to all employees and executives in manufacturing plants using Doall contour machines is announced by Continental Machine Specialties, Inc., Minneapolis, Minn.

In a statement accompanying the announcement of this User's Accomplishment Contest the manufacturer states that there have been such astonishing savings in time and material affected from contour sawing and filing that this contest was hit upon to acquaint a greater number of metal fabricators with this new method. Early in 1937 the company issued its handbook on contour sawing but now within a year users of Doall machines have informed the company of many accomplishments which were not at first even thought of and all of which go to prove the practicability of continuous sawing and filing for the fabrication of products in many different industries.

A principal prize of $100.00 is offered to the individual who submits data on the most unusual example of Doall contour machining. A prize of $50.00 is to be paid for what is considered the next best application and after that $5.00 for each photograph or drawing which may be submitted and accepted for publication in the company's descriptive literature. With the first and second prizes a Doall supply cabinet is presented to the company with which the winner is associated and a new interlocking file band with each $5.00 prize.

The judging of the entries will be on the basis of: (1) Time saved over conventional and previous methods; (2) Material saved; (3) Unusual type of operation performed; (4) Value of method to other fabricators.

Further details regarding prizes and rules, judging and time limits of the contest may be obtained by writing Continental Machine Specialties, Inc., Minneapolis, Minn.

New Combination Vernier Caliper and Height Gauge

A NEW Mauser Vernier Caliper particularly designed for the use of tool makers is announced by George Scherr Company.

The new caliper graduated in 1/1000 and 1/128 inch is made in three sizes with measuring capacities of 7, 9, and 11 inches. It is known as type No. 537 with height gauge combination. A base which is furnished with it, when attached by means of a screw and an accurately tapered center at the end of one jaw, transforms the caliper into a height gauge.

The base has a new design much heavier and larger in area so that the height gauge will rest firmly on the surface plate without the possibility of tilting. Two knife edges which the vernier caliper has, are practical for layout work, for measuring distances between holes, as well as root diameters of gears, etc.

An advantage of the scribing attachment, which is a separate unit and may be firmly attached to the upper jaw, is that the steel point is adjustable making it possible to set the height gauge at an even figure of the scale when starting to measure. This should save much time and effort ordinarily required for calculation.

For a circular describing the new Mauser Vernier Caliper write to George Scherr Co., 130 Lafayette Street, New York City and ask for Bulletin TD.

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FORGED
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Billets and Bars of High Speed, Carbon and Alloy Tool Steel; Billets and Bars of SAE Specifications—Nitralloy and Stainless Grades

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- Unusual features include large die space and chrome nickel steel crankshaft.
- Produced in sizes from 10 ton to 70 ton capacity and in flywheel, geared, convertible geared and motor driven types.
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Modern shop facilities and an experienced organization of highly skilled craftsmen qualify us to do your work.

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May we figure with you?

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OHIO TOOL CO.
3160 W. 106 St., Cleveland, Ohio
CLearwater 3200

New Atlas Circular Available

A STRIKING new broadside type folder, describing in detail its Precision 7-inch Shaper for tool room and shop, has been prepared by Atlas Press Company. With its four speeds ranging from 45 to 200 strokes per minute, its "V" belt drive, automatic cross feed (.005 to .025 inches per stroke) and its crank-type ram-driving mechanism, this machine tool handles the full range of shaper operations including angular shaping, cutting of keyways, dovetailing, horizontal and vertical shaping.

Write Atlas Press Company, 1012 North Pitcher Street, Kalamazoo, Michigan, and ask for circular TD.

New Equipment Installations

BUNELL Machine and Tool Company, Cleveland, Ohio, report purchase of
One No. 41 Lucas "Precision" Horizontal Boring, Drilling and Milling Machine.
One Transitorq Variable Drive Attachment for 36" Engine Lathe.
One Transitorq for Brown and Sharpe Milling Machine.
One Vari-motor Drive Attachment for lathe.

Northeastern Engineering Company, Detroit, Michigan, reports installation of
One Model J. Doall Continuous Sawing and Filing Machine.

Tools and Gages, Inc., of Cleveland, Ohio, reports installation of
Three No. 2 Brown and Sharpe Milling Machines with vertical and dividing head attachments.
One No. 12 Van Norman Miller.
One No. 5 Bardons and Oliver Turret Lathe.

Speedmaster

(Continued from page 32)

cient where only a small part of the ratio is required. The unit is being used very successfully in such equipment as the Doall Contour Machine in which it is standard equipment.

For more specific data, product applications and prices, address The Speedmaster Company, 1307 Washington Avenue S, Minneapolis, Minn.

When you order or write about products described in TDM PROGRESS please mention the publication.

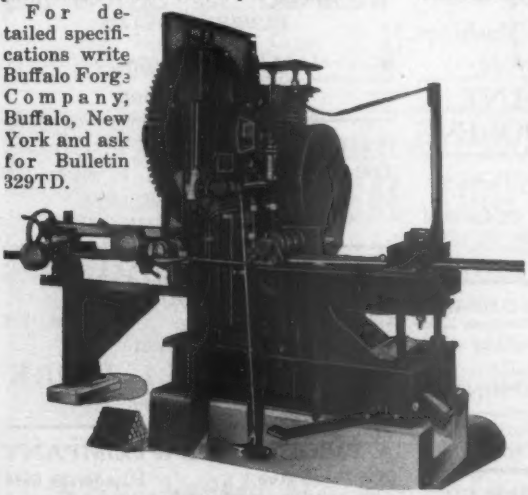
5,000 Accurately Sheared Pieces Per Hour

THIS new automatic shear, designed for continuous shearing of bar stock for bolts and rivets, is designed to operate at the rate of 30 strokes per minute on three bars which are fed simultaneously. A total of more than 5,000 sheared pieces per hour is thus assured.

A particular feature is the specially designed roll which automatically adjusts itself to irregularities in bar stock. This eliminates difficulties in the accurate operation of the machine which may arise from such causes.

This Buffalo shear is built in a variety of sizes and capacities and assures both the quality of shearing and the quantity production which industry demands.

For detailed specifications write Buffalo Forge Company, Buffalo, New York and ask for Bulletin 329TD.



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SINKING OF
MULTI-CAVITY MOLDS
•
MIDWEST ENGRAVING WORKS
KEDzie 7400
3512 W. Lake St. CHICAGO, ILL.

Whatchama-Collet

THE first issue of the Modern Collet and Machine Company's *WHATCHAMA-COLLET* was recently mailed to screw machine operators. This company guarantees its complete line of products to be as satisfactory in service as the name of its new house organ is intriguing in name.

The "MODERN" line includes spring collets, feed fingers, collet tubes, pusher tubes, chucking fingers, alloy steel cams and equalizing finger holders.

To have your name on the list address Modern Collet and Machine Company, 409 Salliotte Street, Ecorse, Michigan.

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Small and Medium
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FIXTURES
GAGES
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ASSEMBLIES
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THE DENNING MANUFACTURING CO.
ESTABLISHED 1917
1773-81 EAST 87TH ST. CLEVELAND, OHIO

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Designers and Builders
HIGH GRADE DIES

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5332 Hamilton Ave. ENdicott 2205
Modern equipped shop for building of
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DIES, TOOLS, SPECIAL MACHINERY
Equipment includes:
3" and 5" spindle Horizontal Boring Mills
Large planers Vertical Mill

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Builders of Special Machinery
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Tools, Jigs, Fixtures Tungsten Carbide Tools
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***THE McKINNEY TOOL & MFG. CO.**
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Roller Die Forming Machines
Automatic Saw and Shear Cut-off Machines
Special Machinery—Dies, Jigs and Fixtures

MODERN TOOL & DIE CO.
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150-Man Shop

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Saves Hours of Set-up Time
•
Accurate to Precision Limits

The MAGNA-SINE
A Magnetic Sine Table Adjustable to
ANY DESIRED GRINDING POSITION
ROBBINS ENGINEERING CO.
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When you order or write about products described in TDM PROGRESS please mention the publication.

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***STAR MACHINE & TOOL CO.**
Established 1903
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DIES - JIGS - FIXTURES
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JIG BORING with
Pratt & Whitney Precision Equipment
NEW OPENSIDE PLANER EQUIPMENT
12 ft. x 48" Capacity

TOOLS & GAGES, Inc.
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"Let us be your tool room."
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Tools, Gages, Dies, Jigs, Fixtures
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SWISS JIG BORING
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THE J. C. ULMER COMPANY
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Special Machinery Designing and Building
Experimental, Model, Punch Press and Screw Machine Work

THE VARIETY MACHINE & STAMPING COMPANY
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DESIGNERS AND MANUFACTURERS
DIES
METAL STAMPINGS
We are equipped to make dies and stampings in production up to 250 tons capacity

Dayton, Ohio

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Manufacturers and Engineers
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Designers and Builders of
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The Hamilton Portable Elevating Table

The Deckel FP1 . . .
UNIVERSAL TOOL ROOM MILLER

MILLS : : : BORES : : : REAMS
SLOTS : : : DRILLS : : : SHAPES
at any angle—Horizontal and Vertical

Write for modern milling machine booklet.

H. P. Preis Engraving Machine Co. 159 Summit St. Newark, N. J.

For Still Better Heat Treating

We Have Added: 1 Bellevue Gas Fired Furnace, 37" x 84"
2 Lindberg Pot Type Furnaces, 20" x 24"
1 Lindberg Cyclone Draw Furnace, 28" x 28"

Automatic controls eliminate the possibility of human error and assure perfect heat treating.

Tool Work Our Specialty

- *Heat Treating*
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- *Carburizing*
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THE GEO. H. PORTER STEEL TREATING CO.
1225 Marquette St. Tel. HEnderson 6601 Cleveland, Ohio

Write or phone for our copyrighted Hardness Conversion Chart

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DAVIS TOOL & ENGINEERING COMPANY
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TOOLS and DIES
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***ENTERPRISE MACHINE PARTS CORP.**
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Manufacturers of
PRODUCTION MACHINE REPAIR PARTS
Motor Drives, Gears, Worms, Tools, Fixtures
Machine Overhaul Specialists

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Manufacturers — Engineers
Dies, Jigs, Fixtures, Gauges
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***KOESTLIN TOOL & DIE CORPORATION**
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Manufacturers
Sheet Metal Dies "Grindrite" Die Grinders

MAJESTIC TOOL & MFG. COMPANY
2948 Woodbridge St., East FItzroy 1011
Manufacturers
General line of Tool and Die Work, Tool Details, Parker High Speed Grinding Spindles

NORTHEASTERN ENGINEERING CO.
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Specialists in the Designing and Building of Progressive Dies
Dies—Tools—Special Machinery

***ROBBINS ENGINEERING COMPANY**
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Designers and Manufacturers
Tools, Dies, Jigs, Fixtures
Special Machinery and Experimental Work

ROYAL OAK TOOL & MACHINE CO.
621 E. Fourth St. ELmhurst 6580
Royal Oak, Mich. *Manufacturers of*
Tools, Dies, Jigs, Fixtures
Special Machinery and Designing
Hook Self-Centering Cylinder Reamers

STAR TOOL & DIE WORKS
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BUILDERS of DIES
Facilities for the Largest
MANUFACTURERS
of STAMPINGS

VINCO TOOL COMPANY
7350 Central Ave. BUelid 9200
PRECISION GAUGES and TOOLS
Spline Gauge and Master Gear Specialists

*See larger display advertisement also.

OIL HARDENING TOOL STEEL TUBING

Substantially reduces labor costs by eliminating the expensive procedure of drilling from the solid.

BISCO TOOL STEEL TUBING is a fine grade tool steel in tubular form available in sizes up to 14" diameter and 2" wall thickness; other sizes to your specification.

THE BISSETT STEEL COMPANY
947 East 67th Street Cleveland, Ohio

Also Stainless Tubes, Mechanical Tubes, Aircraft Tubes, Pressure Tubes

ALLOY HY-TEN STEELS

ALSO POPULAR S.A.E. ALLOY GRADES

SUITABLE FOR A WIDE VARIETY OF USES

HY-TEN "M" TEMPER
Oil Hardening Alloy Steel
For parts requiring great hardness, density of structure, resistance to wear, combined with toughness.

HY-TEN B No. 3X
.50 C. High Man.-Chrome-Moly
Machinable in heat-treated condition at hardnesses up to 42 Rockwell "C" (401 Brinell) or even higher.

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WHEELOCK, LOVEJOY & CO., Inc.
SEND FOR DATA SHEETS

Warehouses DETROIT NEWARK BUFFALO

When you order or write about products described in TDM PROGRESS please mention the publication.

New Universal Drilling Plates and Clamping Blocks Assure Accuracy

NEW time-saving devices for the tool and machine industries are described in a circular published by the National Tool and Machine Company, 45 South Water Street, Rochester, New York.

One is a series of Universal Drilling plates for use on drill presses, jig borers and lathes. Sliding clamps are used to hold the work against the side rails which are square.

The circular illustrates a die block clamped into position to be drilled and reamed. The Master Drill Disc used in connection with the plate is made of non-distorting steel, heat treated, ground and lapped to .00006 of an inch.

The circular also describes Squar-it clamping blocks used for holding and squaring all types of machine work and particularly recommended for use on drill presses, shapers, milling machines, surface grinders, jig boring and engraving machines. It is claimed that there is no chance for error because the blocks are absolutely square and that their use in a tool room affects many savings. Ask for circular TD.

Airplane Engine Flaw Finder Scans Ford V-8 Parts

DEARBORN, MICH., Sept.—A device invented to safeguard the lives of airline passengers now is testing Ford V-8 parts for flaws invisible even under a microscope.

The device requires only iron dust and electricity to bring into plain sight cracks in the metal so tiny they defy detection by any other method of inspection.

The method has proved so successful in "finding accidents before they happen" that the Bureau of Aeronautics urged its use on all vital parts of airplanes and engines. Ford engineers believe they are the first to bring this safety measure into the automobile field.

ARE YOU

Lucky?

The making of this very intricate steel die is the result of the finest craftsmanship and the best of steels. It is vitally important to the life of this die that it is correctly heat-treated. Why try your luck—go where science and facts, as applied to heat-treating, are parts of an every-day routine.

Above illustration very graphically depicts the necessity of carefully studied and planned methods of heat-treating.

LINDBERG STEEL TREATING CO.

225 North Laflin Street • Phone Monroe 3311 • Chicago, Ill.

When you order or write about products described in TDM PROGRESS please mention the publication.

Ford Craftsmen Work In Converted Country Grist Mill

A GROUP of skilled engravers and die cutters, recently established miles from the city in a converted grist mill of pioneer days, already has an important part in the complex operations of the Ford Motor Company.

The men are employed in Nankin Mills, sunny little factory 20 miles up the River Rouge from the great Ford plant at Dearborn, Mich. They produce a wide variety of articles used in the industry.

Precision machinery of the latest type has been placed in the old building. Like the crude millstones to which the early settlers brought their grain for grinding, it is operated by water power. In the modern plant, however, the power is converted into electric current by a turbine-driven generator instead of being taken directly from a mill wheel.

Henry Ford bought and remodeled the old building in 1918 as the first of the 12 "village industries" he has established in rural Michigan to bring about a closer union of agriculture and industry.

Until this year a few men made machine screws in the plant, but recently this operation was transferred to another of the little plants. The engraving and small die cutting equipment then was moved to Nankin Mills from the main Ford plant.

More than 50 men now are employed in Nankin Mills, and many of them live on small farms nearby. The eight-hour day and five-day week, which have been observed for many years throughout the Ford organization, give them ample time to look after their farms. Those who own the larger tracts may obtain leaves of absence during the harvest season.

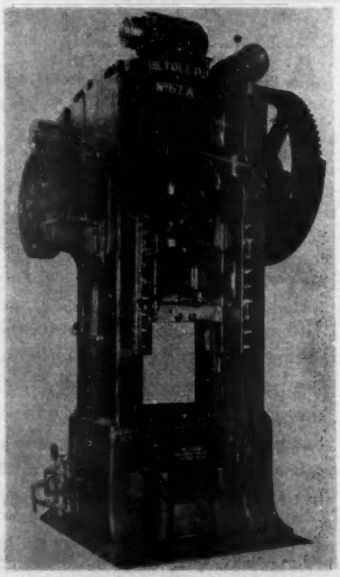
"In the other 'little factories' the men were hired from the surrounding countryside for the most part," the Nankin Mills superintendent said recently, "but the majority of our men, being skilled craftsmen, were transferred here from the Rouge plant.

"Without exception, they are enthusiastic about living and working in the country. Mr. Ford is building a school for their children and other children of the neighborhood, and we expect it to become the nucleus of a colony of craftsmen."

"Toledo" No. 57-A Single and Double Action Press

THE single action press with built-in drawing cushions to do double action work, is proving itself an exceedingly efficient general utility tool. A new design of the Toledo No. 57-A press, shown herewith, brings out some interesting angles on this combination. The press is fitted with a semi-built-in heavy duty "Marquette" hydro-pneumatic die cushion. In its high range this cushion gives about double the normal blankholding pressure, adapting the unit to shape-stretching jobs requiring a very high gripping pressure around the edge of the blank. On such work it is entirely possible to use gripping pressures equal to or exceeding the drawing pressure.

The use of high blankholding pressures particularly with deep draws, involves a decided increase in capacity of the whole driving train on the press including the flywheel and motor. For equivalent work this naturally puts the single action machine and cushion in the price class of the equal double action toggle press.



The Toledo No. 57-A press is manufactured by The Toledo Machine and Tool Co., Toledo, Ohio, and further details may be had by referring to this article.

THE EFFICIENCY OF A SPECIAL JIG OR FIXTURE DEPENDS LARGELY UPON ITS DESIGN •

Can it be loaded and unloaded easily?

Are clamping and unclamping simple—for fast handling—and effective—for positive accuracy?

These respectively determine production quantities and product quality.

Our Engineering Department specializes in the better design of JIGS and FIXTURES, as well as COMPLETE PRODUCT TOOLING PROGRAMS.

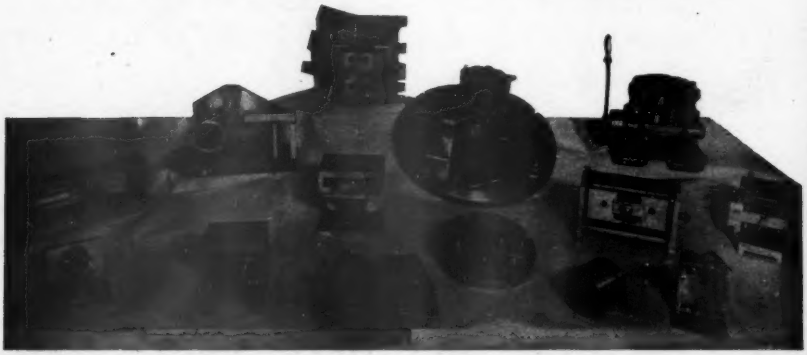
"Planned Production Engineering Service"

THE SOMMER & ADAMS CO.

18511 Euclid Avenue Cleveland, Ohio

Builders also of S & A Continuous Milling Machines
Special Tools and Production Machines

BRING YOUR DESIGNING PROBLEMS TO McKINNEY



A typical group of McKinney-built tools — welded construction.

We are specializing in the designing and building of special production machinery, dies, tools, jigs and fixtures.

Our shop is strictly modern and equipped for a complete variety of work — large, medium and small.

★

Let us design and build, or build to your own design, the machinery and tools you require for production.

If delivery is an important consideration, by bringing your tooling requirements to us, you are assured not only of the best possible workmanship but also prompt delivery.

The McKinney line includes:

Roller Die Forming Machines — Automatic Saw and Shear Cut-Off Machines — Metal Bending Machines — Sheet Metal Fabricating Machines for all purposes.

THE McKINNEY TOOL & MFG. COMPANY

1688 ARABELLA ROAD CLEVELAND, OHIO

Representatives:

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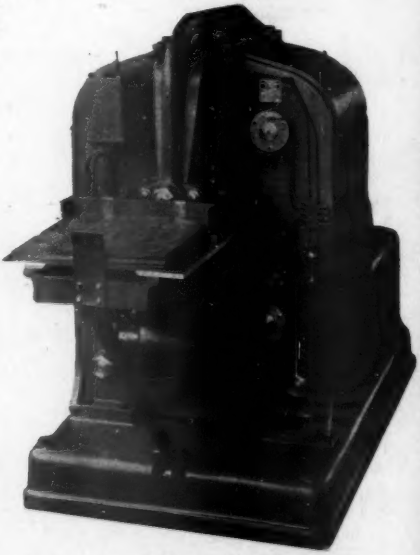
NEFF-KOHLBUSH & RISSELL, 2400 W. Madison St., Chicago, Ill.
TRIPLEX MACHINE TOOL CORP., 125 Barclay St., New York City

Our engineers, trained over a long period of years in our particular lines of work, are the most capable we are able to obtain.



A typical McKinney-designed high-production machine.